

NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

February 7, 2012

Precipitation and Snowpack

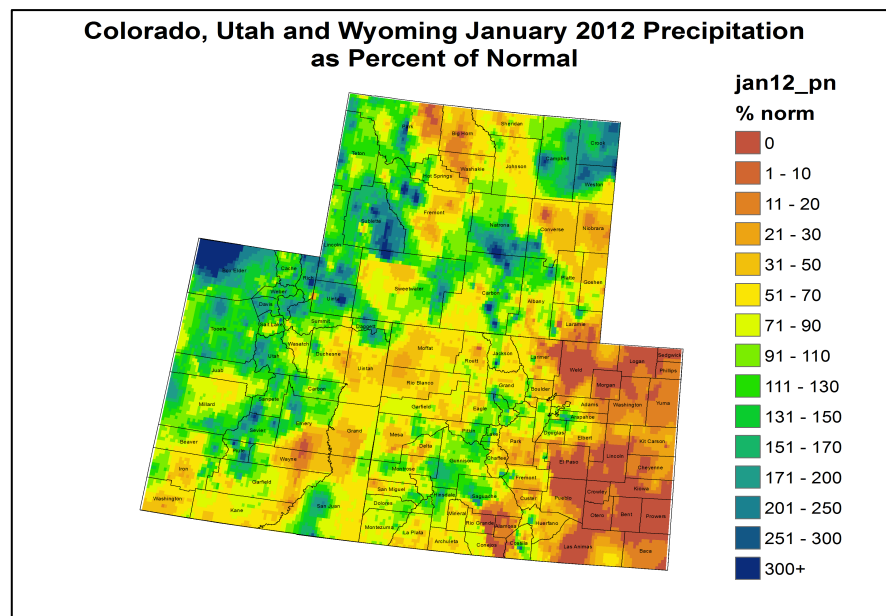


Fig. 1: January precipitation as a percent of average.

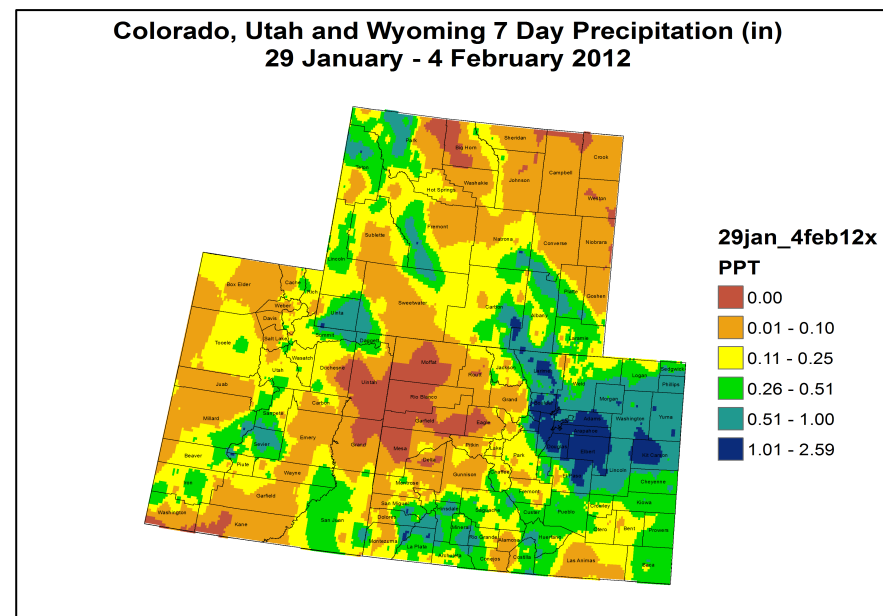


Fig. 2: January 29 – February 4 precipitation in inches.

After a dry December through most of the Upper Colorado River Basin, drier than average conditions have again been observed across much of the UCRB for the month of January (Fig. 1). Spotty areas of near normal precipitation for the month show up in the Gunnison basin in Colorado and in the Wasatch mountains in Utah. Near to above normal precipitation was seen in the Upper Green River basin in Wyoming. Much of the lower elevations of the UCRB have received less than 70% of average precipitation for the month. Eastern CO was also drier for the month, with most areas receiving less than 50% of average.

Last week, a major storm impacted CO east of the UCRB, with many areas in northeast CO receiving between half an inch to over 2 inches of moisture (Fig. 2). The southern portion of the UCRB also benefited from this storm, with the San Juan mountains and Four Corners region seeing around a quarter inch or more of precipitation. Spotty amounts between a tenth and half an inch fell along the Wasatch range and in the Upper Green River basin, but most of the rest of the UCRB was relatively drier, seeing less than a tenth of an inch for the week.

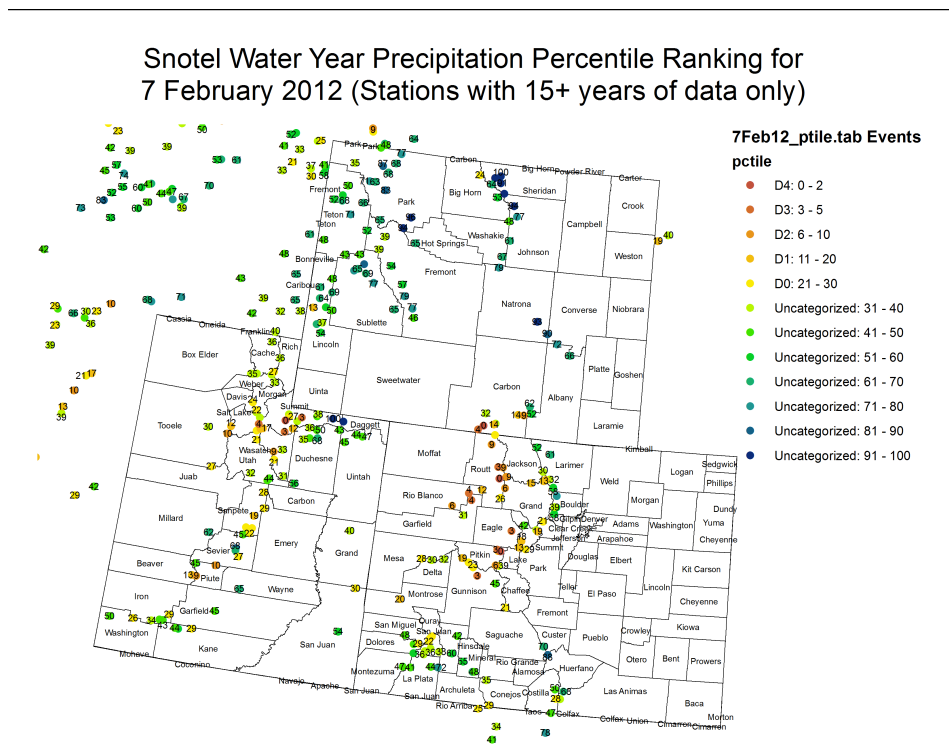


Fig. 3: SNOTEL WYTD precipitation percentiles (50% is median, 21 – 30% is Drought Monitor D0 category).

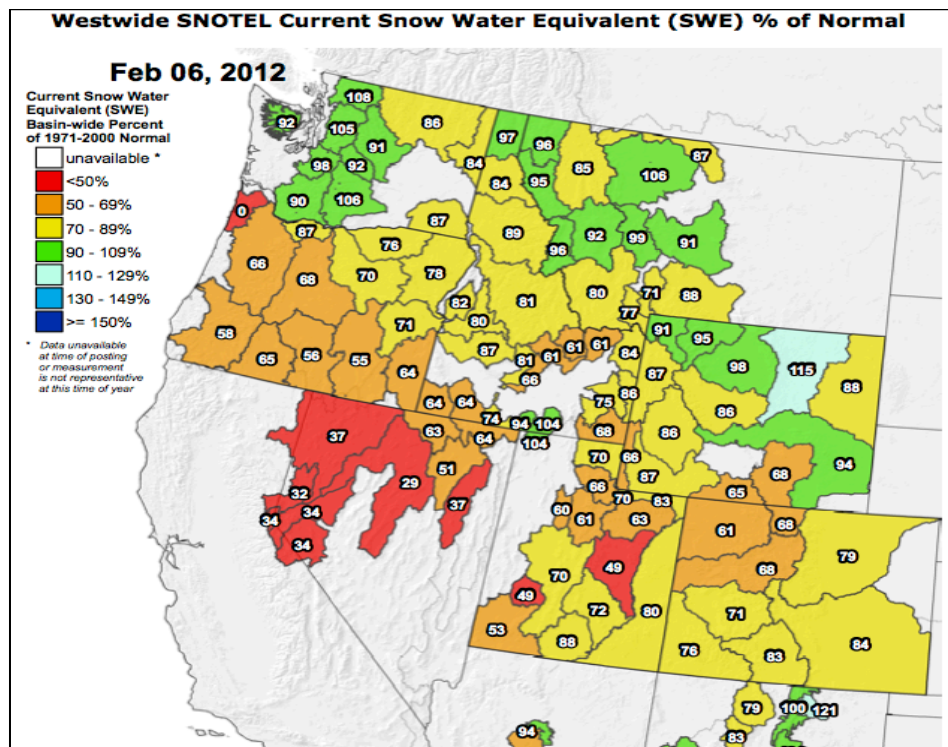


Fig. 4: Basin snow water equivalent (SWE) as a percent of average.

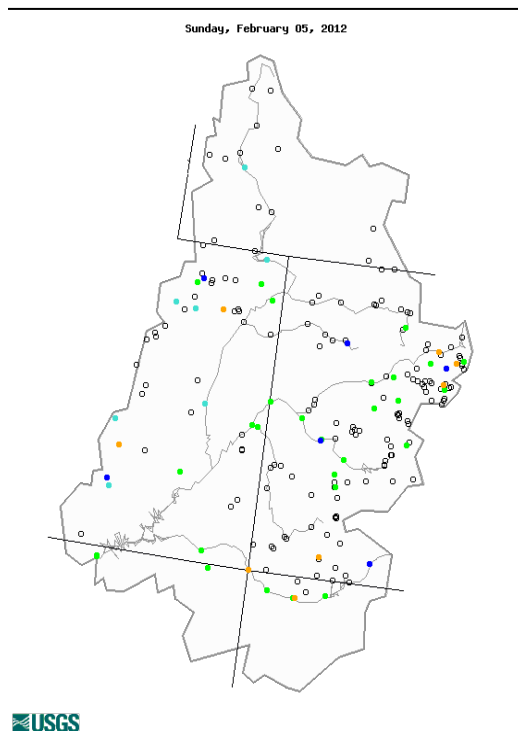
Water-year-to-date (WYTD), SNOTEL precipitation percentiles are low for much of the Yampa and Colorado headwaters basins, and along the Wasatch range in UT (Fig. 3). Percentiles in those areas range from the single digits to around the 20th percentile, with the higher values mainly on north facing slopes or east of the Continental Divide. SNOTEL percentiles in the Upper Green basin in WY are generally above the 50th percentile, and most in the San Juan basin in southern CO are near the 50th percentile.

Snowpack conditions around the UCRB are all below normal (Fig. 4) with most of the sub-basins recording 85% of average or less for snowpack. The southern part of the basin is showing around 75% to 85% of average snowpack for the season, while northwest CO and areas in northeast UT are drier, with less than 70% of average snowpack. The northern fringe of the basin in WY (which did not benefit from the snow storms last week) has seen a drop in basin snowpack to just under 90% of average.

Streamflow

As of February 5th, 83% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) or above normal 7-day average streamflows (Fig. 5). About 26% of the gages in the basin are recording above normal flows, while 16% of the gages in the basin are recording below normal flows. The number of reporting gages in the basin has decreased from over 100 in mid-November to just below 50, as many portions of the rivers are frozen over. There are currently 8 gages recording below normal flows with most of those located near the Colorado River Headwaters region or in the San Juan basin.

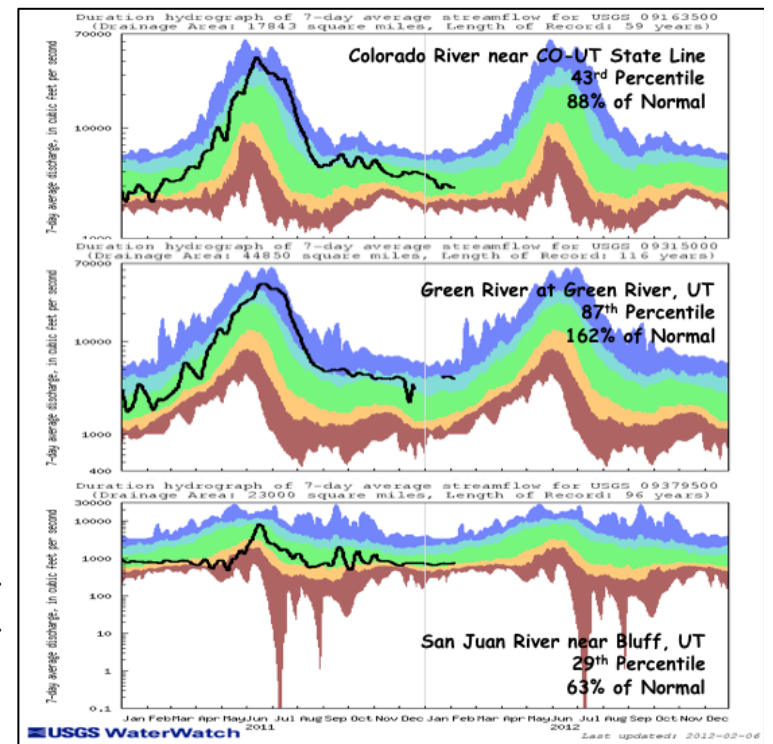
Key gages on the Colorado River at the CO-UT state line and the San Juan River near Bluff, UT are currently recording flows in the normal range at the 43rd and 29th percentiles, respectively (Fig. 6). The gage on the Green River at Green River, UT had become “ice affected” in mid-December and had stopped recording streamflow. It is again recording, now showing above normal flows. Flows at all three gages have been dropping more than what is normal for this time of year.



Explanation - Percentile classes							
●	●	●	●	●	●	●	
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

Fig. 5: 7-day average discharge compared to historical discharge for February 5th.

Fig. 6: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).



Water Supply and Demand

Much of the UCRB and eastern CO saw warmer than average temperatures last week. Northwest CO and northeast UT experienced temperatures more than 5 degrees warmer than average while the northern fringe of the basin was slightly cooler than average. The VIC model continues to show dry soil moisture conditions in southeast CO and in UT around the Colorado River valley (Fig. 7). The VIC also continues to show wet soils around the Colorado headwaters region. Near normal soil moisture conditions are being observed in the Four Corners and San Juan mountains region and in the northern part of the UCRB.

All of the major reservoirs above Lake Powell are above their February averages. Most reservoirs saw storage decreases in January, which is normal for this time of year. However, most showed decreases less than what is normal, indicating that lower release amounts could be a response to current dry conditions. Lake Dillon has seen a slight increase in levels since the beginning of the year, due to a halt in releases from the reservoir. Lake Powell is currently at 86% of average and 64% of capacity (compared to 56% one year ago).

Precipitation Forecast

A progressive pattern will be over the UCRB through most of the week as an area of weak low pressure exits the region and is replaced by a fast moving ridge from the west. This ridge will quickly be shunted off to the east on Wednesday as the next trough moves over the area, with yet another weak system expected to follow on Friday. Given the lack of moisture and weak nature of these systems expect accumulating snowfall to be mostly confined to high mountain areas. Overall the best chance of precipitation will be over the mountains of northwest CO, where up 0.25 inches of liquid accumulation could fall by Saturday (Fig. 8). Ridging returns to the basin for the weekend with the next trough beginning to impact the region by late Sunday. As a result unsettled conditions will again be possible over much of the UCRB moving into early next week.

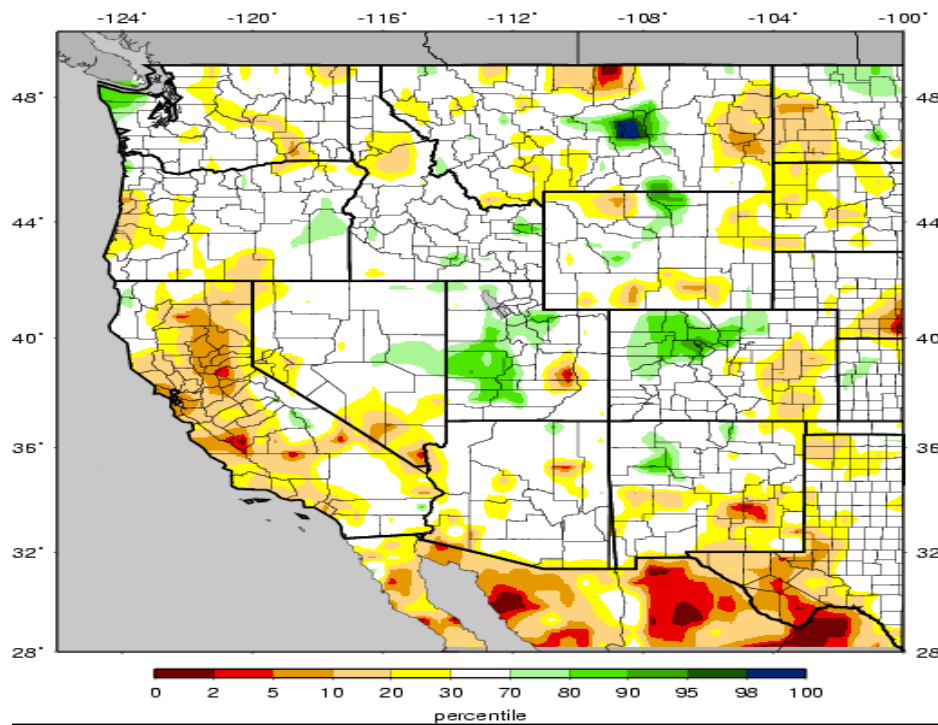


Fig. 7: VIC soil moisture percentiles as of February 5th.

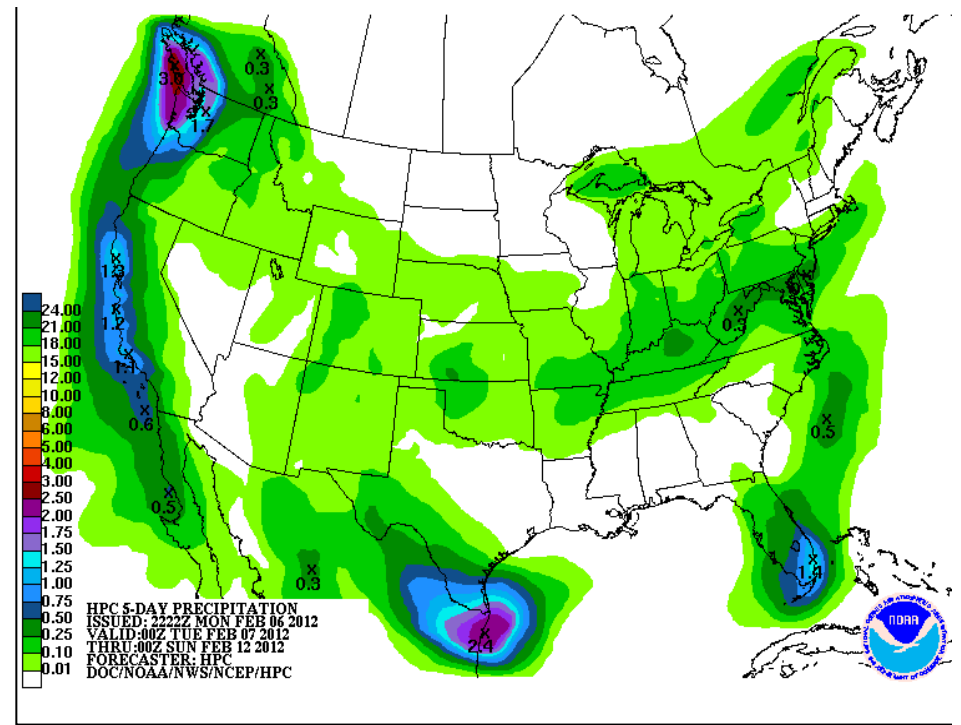


Fig. 8: HPC Quantitative Precipitation Forecast (QPF) through 0Z Sunday.

Drought and Water Discussion

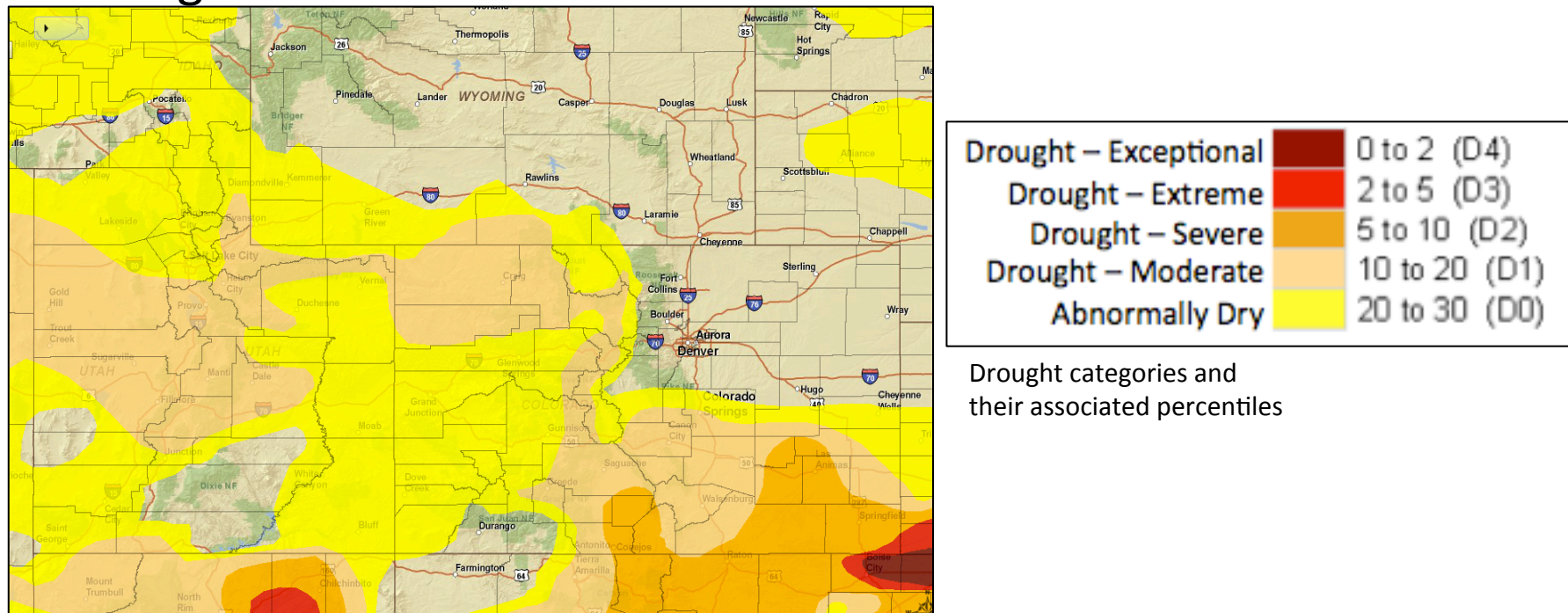


Fig. 9: January 31st release of U.S. Drought Monitor for the UCRB

Status quo is recommended for the UCRB in the current depiction of the U.S. Drought Monitor (USDM) map (Fig. 9). The region only experienced minor, scattered snow accumulations last week that have had little impact on improving conditions.

Status quo is also recommended for eastern CO. After a fairly dry January in southeast CO, no further improvements are recommended at this time. Standardized precipitation indices (SPIs) in the area have greatly improved on time scales shorter than 9 months, but long term impacts are still being observed in the soils, and true improvements may not be seen until the spring as long as beneficial moisture continues to fall from now until then.